

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (CURRENTLY AMENDED) A vibration isolator that prevents an image blur due to a vibration of a camera by moving a correcting optical system, the vibration isolator comprising:

a vibration speed determining device that determines a speed of the vibration;

a differentiating device that differentiates the speed determined by the vibration speed determining device;

an integrating device that integrates the speed determined by the vibration speed determining device;

a correcting device that corrects the integrated value calculated by the integrating device to substantially zero when the differentiated value calculated by the differentiating device is substantially zero; and

a controlling device that controls a position of the correcting optical system according to the integrated value to thereby prevent the image blur due to the vibration of the camera.

2. (CURRENTLY AMENDED) The vibration isolator as defined in claim 1, wherein the vibration isolator prevents the image blur by moving a vibration

isolating device according to a vibration of a vibration determining device, the vibration isolator further comprising:

a switching device that turns on and off vibration isolation,

wherein the controlling device keeps the vibration isolating device at a predetermined position until a predetermined time passes after the switching device turns on the vibration isolation and moves the vibration isolating device according to the vibration after the predetermined time passes.

3. (CURRENTLY AMENDED) The vibration isolator as defined in claim 2, wherein the controlling device stops the vibration isolating device at the predetermined position when the switching device turns off the vibration isolation.

4. (CURRENTLY AMENDED) The vibration isolator as defined in claim 2, wherein the controlling device gradually decreases a driving amount of the vibration isolating device to stop the vibration isolating device at the predetermined position after the switching device turns off the vibration isolation.

5. (ORIGINAL) The vibration isolator as defined in claim 2, wherein the controlling device does not calculate a driving signal for driving the

vibration isolating device when the vibration isolation is off and starts calculating the driving signal after the switching device turns on the vibration isolation.

6. (CURRENTLY AMENDED) The vibration isolator as defined in claim 1, wherein the vibration isolator prevents the image blur by moving a vibration isolating device according to a vibration of a vibration determining device, the vibration isolator further comprising:

a switching device that turns on and off vibration isolation,

wherein the controlling device keeps the vibration isolating device at an origin until a position of the vibration isolating device for preventing the image blur is the origin after the switching device turns on the vibration isolation and moves the vibration isolating device according to the vibration after the position of the vibration isolating device for preventing the image blur is the origin.

7. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 6, wherein the controlling device stops the vibration isolating device at the position when the switching device turns off the vibration isolation.

8. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 6, wherein the controlling device gradually decreases a driving amount of

the vibration isolating device to stop the vibration isolating device at the position after the switching device turns off the vibration isolation.

9. (ORIGINAL) The vibration isolator as defined in claim 6, wherein the controlling device does not calculate a driving signal for driving the vibration isolating device when the vibration isolation is off and starts calculating the driving signal after the switching device turns on the vibration isolation.

10. (CURRENTLY AMENDED) A vibration isolator as defined in claim 1, wherein the vibration isolator prevents the image blur by moving a vibration isolating device according to a vibration of a vibration determining device, the vibration isolator further comprising:

a switching device that turns on and off vibration isolation,

wherein the controlling device starts moving the vibration isolating device with a driving amount that is smaller than that for preventing the image blur when the switching device turns on the vibration isolation and drives the vibration isolating device while gradually increasing the driving amount to that for preventing the image blur.

11. (ORIGINAL) The vibration isolator as defined in claim 10, wherein the controlling device stops the vibration isolating device at a position when the switching device turns off the vibration isolation.

12. (ORIGINAL) The vibration isolator as defined in claim 10, wherein the controlling device gradually decreases a driving amount of the vibration isolating device to stop the vibration isolating device at a position after the switching device turns off the vibration isolation.

13. (ORIGINAL) The vibration isolator as defined in claim 10, wherein the controlling device does not calculate a driving signal for driving the vibration isolating device when the vibration isolation is off and starts calculating the driving signal after the switching device turns on the vibration isolation.

14-16. (CANCELED)

17. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 1, wherein the controlling device controls a movement of a correcting lens of the correcting optical system within a plane that is perpendicular to an optical axis of the camera.

18. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 1, further comprising:

a low pass filter for filtering a vibration speed signal from the vibration speed determining device,

wherein the differentiating device and the integrating device respectively differentiates and integrates the filtered vibration speed signal from the low pass filter.

19. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 1, wherein the correcting device corrects the integrated value calculated by the integrating device to substantially zero when both conditions of the differentiated value calculated by the differentiating device is substantially zero and when a displacement of a correcting lens of the correcting optical system from an oscillation center is greater than a predetermined threshold value.

20. (CURRENTLY AMENDED) A vibration isolator that prevents an image blur due to a vibration of a camera by moving a correcting optical system, the vibration isolator comprising:

a vibration acceleration determining device that determines an acceleration of the vibration;

an integrating device that twice-integrates the acceleration determined by the vibration acceleration determining device;

a correcting device that corrects the twice-integrated value calculated by the integrating device to substantially zero when the acceleration value determined by the vibration acceleration determining device is substantially zero; and

a controlling device that controls a position of the correcting optical system according to the corrected twice-integrated value to thereby prevent the image blur due to the vibration of the camera.

21. (NEW) The vibration isolator as defined in claim 1, wherein the correcting device corrects the integrated value calculated by the integrating device to substantially zero when both conditions of the differentiated value calculated by the differentiating device is substantially zero and when a restriction of an oscillation range of a correcting lens of the correcting optical system becomes greater than a predetermined threshold.

22. (NEW) The vibration isolator as defined in claim 21, wherein the restriction of the oscillation range of the correcting lens of the correcting optical system is due to a center of oscillation of the correcting lens being displaced from an origin.

23. (NEW) The vibration isolator as defined in claim 1, further comprising:

a switching device configured to turn on and off vibration isolation; and
a driving circuit configured to receive a driving signal from the controlling device and moving the correcting optical system based on the driving signal from the controlling device,

wherein after the switching device turns on the vibration isolation, the controlling device calculates a compensating driving signal necessary to compensate for the image blur due to the vibration of the camera based on the integrated value calculated by the integrating device, and

wherein the driving signal applied to the driving circuit from the controlling device is based on the calculated compensating driving signal.

24. (NEW) The vibration isolator as defined in claim 23,
wherein for a predetermined period of time after the switching device turns on the vibration isolation, the controlling device does not output the driving signal, and

wherein after the predetermined period of time, the controlling device outputs the compensating driving signal as the driving signal.

25. (NEW) The vibration isolator as defined in claim 23,

wherein after the switching device turns on the vibration isolation, the controlling device does not output the driving signal until when the calculated compensating driving signal becomes zero, and

wherein starting when the calculated compensating driving signal becomes zero, the controlling device outputs the compensating driving signal as the driving signal.

26. (NEW) The vibration isolator as defined in claim 23,

wherein during a predetermined period of time after the switching device turns on the vibration isolation, the controlling device outputs a portion of the calculated compensating driving signal as the driving signal,

wherein the portion gradually increases during the predetermined period such that the driving signal at the end of the predetermined period is the full compensating driving signal, and

wherein the portion is less than 1 at a beginning of the predetermined period.

27. (NEW) The vibration isolator as defined in claim 23,
wherein during a predetermined period of time after the switching device turns off the vibration isolation, the controlling device outputs a portion of the calculated compensating driving signal as the driving signal,
wherein the portion gradually decreases during the predetermined period such that the driving signal at the end of the predetermined period is zero.

28. (PREVIOUSLY PRESENTED) The vibration isolator as defined in claim 20, wherein the correcting device corrects the twice-integrated value calculated by the integrating device to substantially zero when both conditions of the acceleration value determined by the vibration acceleration determining device is substantially zero and when a displacement of a correcting lens of the correcting optical system from an oscillation center is greater than a predetermined threshold value.

29. (NEW) The vibration isolator as defined in claim 20, wherein the correcting device corrects the twice-integrated value calculated by the integrating device to substantially zero when both conditions of the acceleration value determined by the vibration acceleration determining device is substantially zero and when a restriction of an oscillation range of a

correcting lens of the correcting optical system becomes greater than a predetermined threshold.

30. (NEW) The vibration isolator as defined in claim 29, wherein the restriction of the oscillation range of the correcting lens of the correcting optical system is due to a center of oscillation of the correcting lens being displaced from an origin.

31. (NEW) The vibration isolator as defined in claim 20, further comprising:

a switching device configured to turn on and off vibration isolation; and
a driving circuit configured to receive a driving signal from the controlling device and moving the correcting optical system based on the driving signal from the controlling device,

wherein after the switching device turns on the vibration isolation, the controlling device calculates a compensating driving signal necessary to compensate for the image blur due to the vibration of the camera based on the twice-integrated value calculated by the integrating device, and

wherein the driving signal applied to the driving circuit from the controlling device is based on the calculated compensating driving signal.

32. (NEW) The vibration isolator as defined in claim 31,
wherein for a predetermined period of time after the switching device turns on the vibration isolation, the controlling device does not output the driving signal, and

wherein after the predetermined period of time, the controlling device outputs the compensating driving signal as the driving signal.

33. (NEW) The vibration isolator as defined in claim 31,
wherein after the switching device turns on the vibration isolation, the controlling device does not output the driving signal until when the calculated compensating driving signal becomes zero, and

wherein starting when the calculated compensating driving signal becomes zero, the controlling device outputs the compensating driving signal as the driving signal.

34. (NEW) The vibration isolator as defined in claim 31,
wherein during a predetermined period of time after the switching device turns on the vibration isolation, the controlling device outputs a portion of the calculated compensating driving signal as the driving signal,

wherein the portion gradually increases during the predetermined period such that the driving signal at the end of the predetermined period is the full compensating driving signal, and

wherein the portion is less than 1 at a beginning of the predetermined period.

35. (NEW) The vibration isolator as defined in claim 31,

wherein during a predetermined period of time after the switching device turns off the vibration isolation, the controlling device outputs a portion of the calculated compensating driving signal as the driving signal,

wherein the portion gradually decreases during the predetermined period such that the driving signal at the end of the predetermined period is zero.

36. (NEW) The vibration isolator as defined in claim 1, wherein the correcting device is configured to correct the integrated value calculated by the integrating device to substantially zero when the differentiated value calculated by the differentiating device is substantially zero without regard to a position of the correcting optical system prior the correction of the integrated value.

37. (NEW) The vibration isolator as defined in claim 20, wherein the correcting device that corrects the twice-integrated value calculated by the

integrating device to substantially zero when the acceleration value determined by the vibration acceleration determining device is substantially zero without regard to a position of the correcting optical system prior the correction of the twice-integrated value.

38. (NEW) The vibration isolator as defined in claim 1, wherein the control device does not perform a judgment of panning or tilting.

39. (NEW) The vibration isolator as defined in claim 20, wherein the control device does not perform a judgment of panning or tilting.